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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,677	11/21/2005	Rudolf Beckmann	RPP-202	2418
24972	7590	12/03/2010		
FULBRIGHT & JAWORSKI, LLP 666 FIFTH AVE NEW YORK, NY 10103-3198				
EXAMINER				
FORD, NATHAN K				
ART UNIT		PAPER NUMBER		
1712				
NOTIFICATION DATE		DELIVERY MODE		
12/03/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

nyipdocket@fulbright.com

Office Action Summary

Application No.

10/552,677

Applicant(s)

BECKMANN, RUDOLF

Examiner

NATHAN K. FORD

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2010.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-28 and 30-55 is/are pending in the application.
4a) Of the above claim(s) 44-53 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 26-28, 30-43, 54 and 55 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 10 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Applicant's Response

Acknowledged is the applicant's request for reconsideration filed October 1, 2010. Claim 26 is amended.

The applicant contends that the amendments to claim 26, which now recite an extraction grid which is convexly formed when "viewed from the direction of the extraction of the plasma beam," overcome the applied prior art.

In response, the examiner maintains that the cited prior art already discloses this feature. With reference to Figure 2 of Adler, the plasma is formed within region 27 and then extracted through grid 29. Grid 29 is depicted as being bowed outward, or convexly formed, with regard to the direction of plasma extraction.

Claim Interpretation

By employing *means for* language, the applicant invokes USC 112, sixth paragraph.

Regarding claim 26, the "electrical means for igniting and sustaining the plasma" will be interpreted as being inclusive of both electrical connections and a high-frequency transmitter according to paragraph twenty-four of the applicant's specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26-27, 30, 39-42, and 54-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichiki et al., US 2004/0244687, in view of Adler, US 4,587,430.

Claims 26-27, 30, 42, 54-55: Ichiki teaches the following:

- A high frequency plasma beam source (Fig. 1);
- A plasma chamber (1);
- Electrical means for igniting and sustaining the plasma comprising a high-frequency transmitter (20) and electrical connections (26);
- A metal extraction grid (4) disposed in the area of an outlet opening.

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Ichiki's extraction grid is planar in shape; however, non-planar extraction grids are well-known in the art. For example, Adler discloses an ion implantation device employing a grounded non-planar extraction grid (29) (3, 30-35). As would be apparent to one of ordinary skill, the curvature of a grid determines the pathway of the molecules extracted therethrough. In the instant case, Adler's concave grid effects a divergent dispersion path of extracted molecules which mirrors the grid's curvature (Fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to configure an extraction grid concavely to ensure widespread deposition across the entirety of the substrate. Lastly, it has been held that the configuration of the claimed element is a matter of choice which a person of ordinary skill would have found obvious (*In re Dailey*, 149 USPQ 47).

Claim 39: Figure 5 of Ichiki delineates multiple gas sources. At least one of these sources can be used to provide a gas having a composition and temperature that would beget evaporation, as a recitation concerning the manner in which a claimed apparatus is to be employed does not differentiate the apparatus from prior art satisfying the claimed structural limitations (*Ex parte Masham*, 2 USPQ2d 1647).

Claim 40: Ichiki is silent regarding the composition and width of the extraction grid. Adler discloses an ion implantation device comprising a non-planar extraction grid (26) consisting of tungsten and having a width of 1 mm; tungsten is capable of withstanding significant heat loading due to ion bombardment, and a small mesh width minimizes ion losses to the extraction grid (4, 66ff). For these reasons, it would have been obvious to one of ordinary skill in the art at the time the invention was made to compose Ichiki's extraction grid with tungsten and to configure its width to be 1 mm.

Claim 41: Ichiki discloses a coil (10) circumscribing the plasma chamber capable of effecting a magnetic field. Thus, the coil may be designated as a magnet and is capable of locking a plasma within its chamber accordingly; a recitation concerning the manner in which a claimed apparatus is to be employed does not differentiate the apparatus from prior art satisfying the claimed structural limitations.

Claims 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichiki in view of Adler and in further view of Oechsner, US 5,156,703.

Claim 33: Ichiki and Adler are silent regarding the dimension of the extraction grid. In supplementation, Oechsner teaches a plasma beam source comprising a chamber for plasma (7), an extraction grid (1), and electrical means (3, 5) to ignite the plasma. The extraction grid is a mesh structure whose width and dimension are configured as changeable to achieve the desired plasma distribution; however, it is prescribed that the mesh openings be smaller

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than the space charge layer to facilitate particle permeability (9, 12-22). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the apertures of Ichiki's extraction grid to have a smaller width than the space charge zone. Lastly, as both Adler and Oeschner attest, it would also be obvious to one of ordinary skill to fashion Ichiki's grid as a mesh, given that it is well-known in the art to extract plasma particles through a mesh grid.

Claims 34-35: It should be noted that Oeschner demonstrates the dependence of the width of the space charge zone upon manipulatable factors such as current and voltage (6, 1-10). Thus, the exact value of the space charge zone is drawn to how the operator intends to use the apparatus, and it is the examiner's position that only a nominal modification of the inputs would be required to achieve an equivalency between the thickness of the space charge zone and the width of the mesh openings. Further, in determining the proper relationship between mesh width and space charge zone thickness, it would have been obvious to one of ordinary skill to seek a range of values of the space charge zone through routine experimentation, as it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215).

Claims 28, 37-38, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichiki in view of Adler and in further view of Betz et al., US 5,656,141.

Ichiki's substrate support is substantially planar. Betz, however, distributes a plasma beam across multiple substrates arranged on a domed surface (30) to facilitate a consistent and equal coating process (Fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the substrate support surface of Ichiki as a domed surface to achieve the predictable result of improving the regularity of the plasma distribution.

Claims 31-32 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichiki in view of Adler and in further view of Kumagai et al., JP 2001-210245, wherein machine translation is relied upon.

Ichiki does not configure the plasma apparatus with masks. Kumagai, however, discloses an ion source comprising an extraction grid (8) which delimits the boundary of the plasma chamber; below this boundary is a mask (7) disposed within the exit opening of the plasma chamber [0014]. The mask is provided with an electrical potential to control the plasma distribution [0039]. It would have been obvious to one of ordinary skill in the art at the time the

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invention was made to incorporate an electrically connected mask within the opening of Ichiki's plasma chamber to enhance control over the plasma distribution.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan K. Ford whose telephone number is 571 270 1880. The examiner can normally be reached on M-F, 8:30-5:00 EDT. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland, can be reached at 571 272 1418. The fax phone number for the organization where this application or proceeding is assigned is 571 273 8300.

/N. K. F./

Examiner, Art Unit 1712

/Karla Moore/

Primary Examiner, Art Unit 1716